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### Appendix J Biological Resources Reference Documents

- J-1: Protocol for Biological Surveys
- J-2: Biological Resource Surveyors Qualifications and Resumes
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### 5.3 BIOLOGICAL RESOURCES

Biological resources potentially affected by the project include vegetation, wildlife, and conservation resources designated by federal and state regulatory agencies. Through agency consultations, project planning, and appropriate mitigation measures, the Tesla Power Project (TPP) will conform to all applicable regulations for protection of biological resources. Project design features and planned mitigation measures will ensure potential impacts to biological resources remain insignificant.

The biological resource evaluation for the TPP includes the approximately 60 acre project site and the adjacent 49 acre construction laydown area. Linear project features include a site access road, transmission line, natural gas pipeline, and water supply pipeline and pump station. Project facilities are located in Alameda and San Joaquin Counties as illustrated in Figure 3.2-1.

The project lies within the western foothills of California's Central Valley, which includes the Sacramento and San Joaquin Valleys. The valley floor is 430-miles long and encompasses approximately 15 million acres. The San Joaquin Valley floor is occupied by many urban centers. The entire valley floor and many of the flatter upland areas are urbanized or converted to cultivated cropland. Less than five-percent (150,000-acres) of the valley floor remains uncultivated, and much of this is in the foothills on the valley perimeter. Much of the non-cultivated or urbanized areas have been developed for petroleum extraction, strip-mined for gypsum and clay, or occupied by roads, canals, airstrips, oil-storage facilities, pipelines, and evaporation and percolation basins.

The major types of natural plant communities in the Central Valley (below 1,500-feet) include herbaceous (grasslands, vernal pools, and marshes), shrublands, woodlands, and riparian forests. Grasslands in the Central Valley are classified as valley and foothill grasslands (Holland, 1986) and are dominated by perennial or annual grasses. Grassland communities in the valley include nonnative grassland, pine bluegrass grassland, relictual interior dune grassland, valley needlegrass grassland, and valley sacaton grassland (Williams *et al.*, 1998). The TPP project site and surrounding area consists almost entirely of nonnative annual grassland.

#### 5.3.1 Regional Biological Resources

Regional biological resources within the project region, which includes an approximate 12-mile radius around the project site, were evaluated. These include California Department of Game and Fish (CDFG) Significant Natural Areas (SNAs), CDFG Lands and Facilities, The Nature Conservancy (TNC) Preserves and Projects, US Fish and Wildlife Service (USFWS) Wildlife Refuges, conservation and mitigation banks, California State Parks, Bureau of Land Management Public Lands, and Resource Conservation Districts. National Wetland Inventory (NWI) data and GAP Analysis data were also evaluated to determine significant regional biological resources. Regional biological resources are illustrated in Figure 5.3-1.



**5.3.1.1 CDFG Significant Natural Areas (SNAs)**

The goals of the Significant Natural Areas (SNAs) Program are to identify the most significant natural areas in California, ensure the recognition of these areas, seek the long-term perpetuation of these areas, and provide coordinating services for other public agencies and private organizations interested in protecting natural areas (CDFG, 2001c).

SNAs are identified using biological criteria and are areas that support extremely rare species or habitats or associations or concentrations of rare species or habitats. The identification of SNAs is for educational purposes only and does not imply any additional authority by CDFG over these areas. The information gained from the identification of SNAs is used for watershed or bioregional conservation planning, such as Habitat Conservation Plans, Natural Community Conservation Planning, and regional open space plans; environmental document review and recommended sites for mitigation banking; and designation of special-status areas on public lands or acquisition planning for natural areas (CDFG, 2001c).

The nearest SNAs to the project are immediately to the north of the project site along the Interstate 580 corridor and immediately to the south of the project site surrounding the Haera Wildlife Conservation Bank.

**5.3.1.2 CDFG Lands and Facilities**

The Lands and Facilities Branch of CDFG works to ensure that the State's land and facilities are managed and maintained to provide optimal benefits for fish and wildlife and the public. The Lands and Facilities Branch accomplishes this task by:

- Developing uniform, statewide policies relative to the acquisition, protection, maintenance, and enhancement of lands and facilities;
- Developing uniform guidelines for compatible public use and for the preparation of land management plans that focus on fish and wildlife needs and seek cooperative relationships with adjacent landowners;
- Providing budgetary assistance, engineering support and other technical assistance; and
- Fostering public use, knowledge and enjoyment of lands and facilities through interpretive services and other activities.

CDFG Lands and Facilities include wildlife areas, ecological reserves, and fish hatcheries. There are no CDFG Lands or Facilities within the approximate 12-mile radius included in Figure 5.3-1 (CDFG, 2001b).

**5.3.1.3 The Nature Conservancy (TNC) Preserves and Projects**

The Nature Conservancy (TNC) is a private conservation organization. The mission of TNC is to preserve plants, animals, and natural communities. TNC protects habitats through the acquisition of land and by helping public agencies, universities, and local conservation organizations acquire and manage critical portions of natural habitats.

TNC manages over 100 projects and preserves throughout California, some of which are open to the public for educational purposes and recreational uses such as hiking, nature study, bird watching, and photography. There are no TNC Preserves or Projects within the approximate 12-mile radius included in Figure 5.3-1 (TNC, 2001).

#### **5.3.1.4 USFWS Wildlife Refuges**

The National Wildlife Refuge System includes a variety of “special management areas” such as Wilderness, Research Natural Areas, Wetlands of International Importance, Wild and Scenic Rivers, and National Natural Landmarks. The refuge system is the only diverse national network of public lands set aside for the conservation of fish, wildlife, and plants, and provides habitat for numerous threatened and endangered plant and animal species (USFWS, 1999a).

Nationwide, there are more than 500 refuges, several thousand Waterfowl Production Areas, and 51 Coordination Areas within the refuge system; however, there are no USFWS Wildlife Refuges within the approximate 12-mile radius included in Figure 5.3-1.

#### **5.3.1.5 Conservation and Mitigation Banks**

Mitigation banks are preserves that are large areas of constructed, restored, or preserved natural areas that are set aside for the express purpose of providing compensatory mitigation for impacts to habitat. A mitigation bank is authorized to sell the habitat values created on the preserve. These values, known as credits, are sold to landowners who need to substitute natural areas for those lost to development where avoidance or on-site mitigation is not feasible (Wildlands, Inc., 2001).

Wildlands, Inc. manages two conservation and mitigation banks in the approximate 12-mile radius included in Figure 5.3-1:

- Brushy Creek Mitigation Bank
- Haera Wildlife Conservation Bank

#### **Brushy Creek Mitigation Bank**

The Brushy Creek Conservation Bank is a 120-acre preserve located in Contra Costa County, approximately 11-miles northwest of the project site. The Brushy Creek Mitigation bank provides mitigation credits for burrowing owls.

#### **Haera Wildlife Conservation Bank**

The Haera Wildlife Conservation Bank is located immediately south of the project site in Alameda County. It currently provides mitigation credits for burrowing owls. Wildlands, Inc. is in the process of obtaining CDFG approval for San Joaquin kit fox mitigation credits (Berry, 2001).

**5.3.1.6 California State Parks**

The California State Park System is managed by the California Department of Parks and Recreation. The State Park System includes underwater preserves, reserves, and parks; redwood, rhododendron, and wildlife reserves; state beaches, recreation areas, wilderness areas, and reservoirs; state historic parks, historic homes, Spanish era adobe buildings, including museums, visitor centers, cultural reserves, and preserves; as well as lighthouses, ghost towns, waterslides, conference centers, and off-highway vehicle parks. The purpose of the parks is to protect and preserve culturally and environmentally sensitive structures and habitats, threatened plant and animal species, ancient Native American sites, and historic structures and artifacts (State of California, 2000).

There are two California State Parks within the approximate 12-mile radius included in Figure 5.3-1: Bethany Reservoir State Recreation Area and Lake Del Valle State Recreation Area. Both parks are part of the State Water Project.

**Bethany Reservoir State Recreation Area**

Bethany Reservoir State Recreation Area is located in the northernmost part of the San Joaquin Valley, approximately 4-miles north of the project site. Bethany Reservoir is the northern terminus of the California Aqueduct and is a popular site for water-related recreation such as fishing and windsurfing (State of California, 2000).

**Lake Del Valle State Recreation Area**

Lake Del Valle is composed of 4,000-acres of park and 750-acres of lake. It is located in central Alameda County, approximately 5-miles south of Livermore and 12-miles southwest of the project site. Wildlife that may be spotted in the park include deer, raccoon and a wide variety of birds, including heron, cormorants, and a rare pair of bald eagles that are nesting at Lake Del Valle State Recreation Area (State of California, 2000).

**5.3.1.7 Bureau of Land Management (BLM) Public Lands**

The Bureau of Land Management (BLM) manages wilderness and recreation areas throughout the United States. Wilderness areas are remote and undeveloped and are preserved under federal law because they offer special ecology, scenery, geology, history or other values. Recreation areas are established for activities such as bird watching, camping, fishing, hunting, hiking, river recreation, and wildlife viewing (BLM, 2001). There are numerous wilderness and recreation areas throughout California; however, there are no lands managed by BLM within the approximate 12-mile radius included in Figure 5.3-1.

**5.3.1.8 Resource Conservation Districts (RCDs)**

Resource Conservation Districts (RCDs) emerged in the 1930s as a way to prevent soil erosion problems. Today, RCDs address a wide range of conservation issues that include forest fuel management, water and air quality, wildlife habitat restoration, soil erosion control, and conservation education. There are 103 RCDs in California, and there are two within the



project approximate 12-mile radius included in Figure 5.3-1: the Alameda County Resource Conservation District and the Contra Costa Resource Conservation District (CARCD, 2001). The RCDs are illustrated in Figure 5.3-1.

### **Alameda County Resource Conservation District**

The Alameda County Resource Conservation District is a consolidation of the Eastern Alameda County Soil Conservation District and the Western Alameda County Soil Conservation District; the two districts consolidated in 1972. The critical resource concerns of the district are watershed management and planning, natural resource project permit facilitation, watershed education for youth and families, equestrian facilities management, grazing management, water quality management including soil erosion and sedimentation, vineyard management, wildlife habitat, riparian habitat and stream restoration, and locally-led conservation and stewardship with emphasis on the Resource Conservation District's role (CARCD, 2001). The district covers all of Alameda County and encompasses the project site, the transmission line, the water supply pipeline and pump station, and the western-most 1-mile of the natural gas pipeline.

### **Contra Costa Resource Conservation District**

The Contra Costa Resource Conservation District was created in 1941 to provide an organized means for local people to carry out soil and water conservation programs that make the best use of natural resources and to control runoff within the district's boundaries, which includes all of Contra Costa County. The guiding principles of the Contra Costa Resource Conservation District include promoting voluntary solutions to resource management, a non-regulatory approach to resource management, advocating comprehensive watershed planning and total resource management, building new alliances to expand partnerships, facilitating locally-led decision making, educating the public about resource conservation, and listening and responding to cooperators' needs (CARCD, 2001).

## **5.3.2 Resource Management Plans**

### **5.3.2.1 San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJMSCP)**

The San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJMSCP) provides a strategy for conserving open space while protecting the area's agricultural economy; protecting landowner property rights; providing for the long-term management of plant, fish, and wildlife species, especially those that are currently listed, or may be listed in the future, under the Federal Endangered Species Act (ESA) of the California Endangered Species Act (CESA); providing and maintaining multiple-use open spaces which contribute to the quality of life of the residents of San Joaquin County; and accommodating a growing population while minimizing costs to project proponents and society (San Joaquin County, 2000).

The conservation strategy of the SJMSCP relies on minimizing, avoiding, and mitigating impacts for SJMSCP covered species. Minimization takes a species-based approach emphasizing the implementation of Incidental Take Minimization Measures aimed at averting the actual killing or injury of individual species and minimization of impacts to habitat for these species. Mitigation of unavoidable impacts takes a habitat-based approach which emphasizes compensation for habitat losses through the establishment, enhancement, and management-in-perpetuity of preserves composed of specific vegetation types or association of vegetation types (habitat) upon which discrete groups of species rely. The SJMSCP also provides an alternative mitigation approach that includes complete avoidance of species and habitats. Additionally, the SJMSCP includes a monitoring and adaptive management plan (San Joaquin County, 2000).

#### **5.3.2.2 Recovery Plan for Upland Species of the San Joaquin Valley, California**

The Recovery Plan for Upland Species of the San Joaquin Valley, California covers 34 species of plants and animals that occur in the San Joaquin Valley of California (Williams *et.al*, 1998). There are five endangered plants, one threatened plant, five endangered animals, and 23 candidates or species of concern included in this recovery plan. The majority of the species covered in the plan occur in arid grasslands and scrublands of the San Joaquin Valley and the adjacent foothills and valleys.

The primary objective of the recovery plan is to delist the 11 endangered and threatened species and ensure the long-term conservation of the 23 candidates and species of concern. An interim goal of the plan is to reclassify the endangered species to threatened status. The accomplishment of these goals will be through an ecosystem and community-level approach to recovery. There are six key elements that compose this approach: recovery criteria, which includes protection strategies for the covered species; habitat protection, which entails the establishment of a network of conservation areas and reserves that represent all the pertinent natural communities in the San Joaquin Valley; umbrella and keystone species, which have pivotal roles in either conservation or ecosystem dynamics; monitoring and research program, including emphasis on habitat management research, habitat and species restoration trials, surveys to determine species distributions, biosystematic and population genetics studies, reproductive and demographic studies, population censusing and monitoring, and studies of pesticide effects on the featured species and their associated species; adaptive management, to maintain and enhance species habitat values; and economic and social considerations, which were put in place to reduce the costs of recovery, the impact of recommended actions on the local economy, and the constraints placed on the citizens of the San Joaquin Valley (Williams, *et al.*, 1998).

### **5.3.3 Biological Investigations and Survey Methods**

#### **5.3.3.1 Project Background**

The proposed location of the TPP is within Alameda and San Joaquin Counties. A number of important resources and documents with biological information on the project region are available as follows:

- Alameda County Community Development Agency. 1998. Repowering a Portion of the Altamont Pass Wind Resource Area, Draft Environmental Impact Report.
- Carlsen, T., E. Espeland, and B. Pavlik. 1999. Restoration of the Large-Flowered Fiddleneck (*Amsinckia grandiflora*) at Lawrence Livermore National Laboratory Site 300 Project Progress Report Fiscal Year 1999 October 1998-September 1999. Environmental Protection Department, Environmental Restoration Division.
- San Joaquin County. 2000. San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJMSCP).
- US Department of Energy (US DOE). 2000. Environmental Assessment of the Remediation of Environmental Contaminants at Lawrence Livermore National Laboratory Experimental Test Facility Site 300 California.
- Williams, D.F., E.A. Cypher, P.A. Kelly, K.J. Miller, N. Norvell, S.E. Phillips, C.D. Johnson, and G.W. Colliver. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. US Fish and Wildlife Service, Region 1.

In addition to the available information for the project region, project specific biological surveys have been conducted for the TPP as outlined in the Protocol for Biological Surveys (Appendix J-1) and summarized below.

#### **5.3.3.2 Protocol for Site Surveys**

Natural communities of the project site and surrounding area within one-mile of the site were identified using aerial photographs and mapped at a scale of 1:24,000. Public roads and open areas were driven and walked, where possible, to ground-truth and verify natural communities. Where access was not possible on private lands or within fenced areas, observations were made from the nearest vantage points to document and verify natural community information from the aerial photographs.

Natural communities along pipeline and transmission line routes were mapped at a scale of 1:24000 to a minimum distance of 1000-feet on each side of the centerline. Similar to the project site, aerial photography, followed by ground-truthing by driving or walking the route, was used to determine natural communities.

Sensitive and special-status species surveys were conducted by biologists for the entire site, a 500-foot buffer zone around the site, and 500-feet on either side of the linear features. Surveys were conducted in all areas where potential habitat exists for sensitive and special-status species.

Areas that support sensitive species or their habitats were recorded on 1:6000 scale maps for impact evaluation. The biological resource maps are presented as Appendix J-6.

#### 5.3.3.3 Wetlands Delineation Methodology

Wetlands within the project area boundary were delineated according to guidelines established by the Army Corps of Engineers (ACOE) Wetlands Delineation Manual (ACOE, 1987). The manual focuses on three criteria for identifying wetlands: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. In most cases, all three criteria must be present for an area to be classified as a wetland. However, in disturbed areas, it is necessary for only one or two of the criteria to be present.

#### 5.3.3.4 Special-Status Species

Special-status species are those species with regulatory protection under the federal ESA, the California Department of Fish and Game (CDFG) endangered species program, or listed by the California Native Plant Society (CNPS) as rare or endangered in California. To identify special-status species in the project vicinity, the California Natural Diversity Database (CNDDDB/Rarefind) was queried for the Midway and Clifton Court Forebay USGS 7.5-minute topographic quadrangles (USGS “quad” maps) for the project site and all linear features. USFWS and CDFG were also consulted to identify special-status species that may occur in the area (see Appendix J-4). Table 5.3-1 is a list of special-status plant species known to occur in the project vicinity. Table 5.3-2 is a list of special-status animal species known to occur in the project vicinity.

#### Plants

Five of the plant species listed in Table 5.3-1 are likely to occur within the project vicinity. These species include large-flowered fiddleneck (*Amsinckia grandiflora*), big tarplant (*Blepharizonia plumose plumose*), rose mallow (*Hibiscus lasiocarpus*), Mason’s *Lilaeopsis* (*Lilaeopsis masonii*), and caper-fruited tropidocarpum (*Tropidocarpum capparideum*). The State, Federal, California Native Plant Society (CNPS) status; habitat preference; flowering times; and rarity, endangerment, and distribution codes (R-E-D) are listed in Table 5.3-1 for each of these five species. The other species in Table 5.3-1 are unlikely to occur within the project site or linear corridors because their preferred habitats are not present.

**Large-flowered Fiddleneck** – Large-flowered fiddleneck is a federal and state-listed endangered species and a CNPS List 1B species. It is historically reported from the foothills of the Mt. Diablo Range in Alameda, Contra Costa, and San Joaquin counties (Alameda County Community Development Agency, 1998). Currently, there are three known natural populations. These populations occur on steep, north-facing slopes in the Altamont Hills of the Mt. Diablo range (approximately 6-miles south-southeast of the project location) at low elevations (approximately 300-meters or 984-feet) and border on blue oak woodland and coastal sage scrub communities. Two of the known populations occur at Lawrence Livermore National Laboratory (USDOE, 1992) Site 300, and the third population occurs on private rangelands near the southeast border of LLNL Site 300 (Carlsen *et al.*, 1999). LLNL has

established an experimental population within a 160-acre parcel designated as critical habitat and is working with the US Fish and Wildlife Service (USFWS) on continued monitoring of native and experimental populations and to further develop habitat restoration and maintenance techniques (US DOE, 2000).

**Big Tarplant** – Big tarplant is a CNPS List 1B species. This means that it is rare, threatened, or endangered in California and elsewhere. Its known range is limited to Contra Costa, San Joaquin, and Stanislaus Counties; however, there have been recent discoveries from southwest of Brentwood (north of the project location), Mt. Diablo State Park (west of project location), and Lawrence Livermore National Laboratory's Site 300 test facility near Corral Hollow (approximately 6-miles south-southeast of project location) (Alameda County Community Development Agency, 1998). It has also recently been reported south of the PG&E Tesla Substation (CDFG, 2001a). Big tarplant occurs on dry hills and plains in annual grassland (Hickman, 1993) with clay to clay-loam soils (CDFG, 2001a). It is most often found on slopes or in burned areas (CDFG, 2001a).

**Rose Mallow** – Rose mallow is a CNPS List 2 species; it is rare, threatened, or endangered in California but more common elsewhere (CDFG, 2001a). It inhabits freshwater marshes; moist, humus-rich soil; and the borders of ponds, marshes, lakes, and low, wet woods (CalFlora, 2001). It is known to occur in freshwater marshes of the lower Sacramento and San Joaquin Rivers, and it is threatened by riverbank alteration (Hickman, 1993).

**Mason's Lilaeopsis** – Mason's Lilaeopsis is a federal Species of Special Concern and CNPS List 1B species. It is known to occur in Alameda, San Joaquin, and Sacramento Counties in brackish or freshwater marshes and swamps and wetland riparian scrub habitats (CDFG, 2001a). This species is threatened by development, flood control, and agriculture (Hickman, 1993).

**Caper-fruited Tropicocarpum** – Caper-fruited tropidocarpum is a CNPS List 1A species. CNPS List 1A species are those that are presumed to be extinct in California (CDFG, 2001a). It was historically widespread in the Central Valley and bordering foothills from Monterey County to Glenn County, and there were numerous sitings surrounding Mt. Diablo. Habitat requirements for this species are grassland and oak woodland communities on alkaline-clay soil (Alameda County Community Development Agency, 1998). There are currently no extant populations known, and the species was last seen in California in 1957 (Hickman, 1993). It is believed that the species was eliminated by land conversion and livestock grazing (Alameda County Community Development Agency, 1998).

### **Animals**

A search of the CNDDDB/RareFind (Appendix J-3) and consultations with USFWS and CDFG (Appendix J-4) yielded a list of threatened, endangered, and special concern species that could potentially occur in the project area (Table 5.3-2). The following section describes the habitat characteristics of each of those species and evaluates the potential for the species to be located within the project area.

**Bat species** – There are numerous bat species identified as potentially occurring within the project area. These include the Pacific western big-eared bat, greater western mastiff bat, small-footed Myotis bat, long-eared Myotis bat, fringed Myotis bat, and Yuma Myotis bat. All these bat species require cliffs or woodlands for roosting sites. There are no such habitats within the project area. Additionally, query of CNDDDB/RareFind yielded no known locations for these species within the Midway and Clifton Court Forebay quads.

**San Francisco Dusky-footed Woodrat** – The San Francisco dusky-footed woodrat is a federal and state Species of Special Concern. Dusky-footed woodrats range in a narrow band from the Columbia River, throughout California and into Northern Baja California occupying a variety of habitats including chaparral, coastal sage-scrub, and juniper-pinon pine, oak and riparian woodlands. Woodrats are most well-known for the elaborate stick houses that they build and live in. These houses are most commonly leaned up against the base of a coast live oak or willow tree. Woodrat houses vary in shape and size and may be up to six-feet tall. The houses provide shelter from temperature and moisture extremes (Matocq, 2001). There is not appropriate habitat for this species within the project area, and there are no CNDDDB/RareFind records for this species within the Midway and Clifton Court Forebay quads.

**Riparian Woodrat** – The riparian woodrat is federally proposed endangered and is a state Species of Special Concern. It is known to occur from the Columbia River and Willamette Valley in Oregon to northwestern Baja California. This species has been found on the floor of the Central Valley, but it is restricted to remnant patches of riparian forest along the Stanislaus River (Kelly and Williams, 2000). They inhabit moderately developed and well-developed riparian woodlands with trees such as cottonwood and sycamore (USDOE, 2000). They are most common where shrub cover is dense, and in riparian areas the highest densities occur in willow thickets with a thick oak understory (Kelly and Williams, 2000). There is one historical record for this species in the Corral Hollow Drainage (approximately 6-miles south of the project location) (USDOE, 2000). Currently, there is only one confirmed population of this species which occurs at Caswell Memorial State Park in San Joaquin County (USFWS, 2000b). Loss and fragmentation of suitable riparian habitat are the principal reasons for the decline of the riparian woodrat (Williams, *et al.*, 1998). Within the project area there are no riparian areas sufficient to support populations of the riparian woodrat.

**San Joaquin Pocket Mouse** – The San Joaquin pocket mouse is a federal Species of Special Concern. Its habitat is generally characterized as open, sandy areas with grasses and forbs (CDFG, 1999). Seeds of grasses, forbs, and shrubs such as *Atriplex* sp. are the species' primary food source that is supplemented with soft-bodied insects such as cutworms and grasshoppers. They generally forage under the cover of shrubs and do not travel far or in open areas (CDFG, 1995). The approximate range for this species includes the Sacramento Valley from Tehama County southward, and the San Joaquin Valley to Rose Station. There is not suitable foraging habitat within the project area for this species, and the nearest sitings have occurred at the LLNL Site 300 where dead pocket mice were found in 1986 and 1991 (USDOE, 2000).

**Riparian Brush Rabbit** – The riparian brush rabbit is a federal and state-listed endangered species. The only known population of the riparian brush rabbit occurs along the Stanislaus River in Caswell Memorial State Park in San Joaquin County (USFWS, 2000b). Historically, it is believed that the riparian brush rabbit was associated with the riparian forests along portions of the San Joaquin River and its tributaries on the valley floor from Stanislaus County to the Delta (Williams *et al.*, 1998). Riparian brush rabbits inhabit dense, brushy areas of valley riparian forests where thriving mats of low-growing vines and shrubs serve as ideal living sites where they build tunnels under and through the vegetation. Suitable habitat is characterized by an abundance of woody ground litter and fewer willows, signifying areas of higher ground that are not subject to regular or heavy flooding (Sandoval *et al.*, 1997), and sites inhabited by riparian brush rabbits usually have a mix of roses, blackberries, marsh baccharis, and grape vines, with high volumes of roses and coyote bushes (Williams, *et al.*, 1998). Riparian brush rabbits feed on the edges of shrub cover and do not venture into large openings (Sandoval *et al.*, 1997). There are two causes of the decline of riparian brush rabbits: 1) the destruction and fragmentation of the San Joaquin Valley riparian forests, and 2) the conversion of land within the floodplain from shrub-dotted pasture land to vineyards, orchards, and row crops (Williams *et al.*, 1998). The lack of suitable riparian habitat and upland shrub cover in the project area makes it unsuitable for riparian brush rabbits.

**San Joaquin Kit Fox** – The San Joaquin kit fox is a federally-listed endangered species and a state-listed threatened species. Historically, kit foxes inhabited most of the San Joaquin Valley from southern Kern County north to eastern Contra Costa County and eastern Stanislaus County (Brown *et al.*, 1997). The current distribution is not well-known due to the lack of a comprehensive survey; however, research projects and incidental sightings indicate that kit fox currently occupy some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin Counties (Williams *et al.*, 1998). Kit fox inhabit desert and semiarid regions of grasslands and other sparsely vegetated, shrubby habitats. They are also known to live in and adjacent to some kinds of agricultural lands and urban areas. The primary habitat requirement for this species is the availability of suitable dens: they need dens throughout the year for shelter and escape. They prefer to dig their dens in friable soils, but in hard clay soils they will create dens by enlarging holes started by ground squirrels or badgers. The majority of dens occur on relatively flat terrain or gently sloping hills, in washes, drainages, and roadside berms (Thelander, 1994). Kit foxes change den sites frequently in a season, moving more often in summer and less often in winter and spring. Transient dens are used throughout the year, whereas natal dens are only used during the breeding and pupping season in the spring. Kit foxes are mostly nocturnal and prey on small mammals, the most important of which is the ground squirrel (Alameda County Community Development Agency, 1998). The primary reasons for the decline of the San Joaquin kit fox are loss, degradation, and fragmentation of habitats associated with agricultural, industrial, and urban developments. Invasion and occupation of potential kit fox habitats by the nonnative red fox may also serve as a limiting factor affecting kit fox

populations (Williams *et al.*, 1998). The entire project area is considered suitable kit fox habitat (Larsen, 2001).

**Tricolored Blackbird** – The tricolored blackbird is a federal and state Species of Special Concern. This species is largely endemic to California (Alameda County Community Development Agency, 1998), and historically bred in the San Joaquin and Sacramento Valleys. However, extensive marsh drainage and habitat destruction has reduced the range and population of this species, and the present breeding range includes small colonies in Humboldt and Mendocino Counties, the Klamath Basin, and the Honey Lake Basin (Small, 1994). Tricolored blackbirds nest in dense colonies in emergent marsh vegetation such as tules and cattails, or in upland sites with blackberries, nettles, thistles, and grainfields. Nesting habitat must be large enough to support 50 pairs, and probably requires water at or near the nesting colony. The usual breeding season for this species is from mid-April to late July, but active breeding has also been reported in October and November in the Sacramento Valley (Granholm, 2001). Often, breeding colonies contain only tricolored blackbirds with perhaps a few pairs of red-winged or yellow-headed blackbirds on the periphery (Small, 1994). Additionally, large foraging areas, including marshes, pastures, agricultural wetlands, dairies, and feedlots with abundant insect prey are required (Alameda County Community Development Agency, 1998). Tricolored blackbirds have been identified foraging at LLNL Site 300 (approximately 6 miles south of the project location) in March and April. There is marginal suitable habitat for this species at certain locations on Patterson Run Creek, including the section of the creek to be crossed by the natural gas line and the section of the creek on the west side of the PG&E Tesla Substation.

**Bell's Sage Sparrow** – Bell's sage sparrow is a federal and state Species of Special Concern. It breeds in the inner Northern Coast Range south from Trinity and Shasta Counties. This subspecies is a characteristic breeding bird of the interior or "hard" chaparral dominated by dense stands of Chamise (Stokes & Stokes, 1996). There is not appropriate habitat for Bell's sage sparrow in the project area, and there are no CNDDDB/RareFind records for this species on the project quads.

**Burrowing Owl** – The burrowing owl is a federal and state Species of Special Concern. This species is found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals (Brown, 1996). Burrowing owls nest and roost in ground burrows and rely on the existence of burrows created by other animals, most often the California ground squirrel (Alameda County Community Development Agency, 1998). They will also use artificial burrows (Brown, 1996). Burrowing owls exhibit high site fidelity and will often reuse the same burrows or the same site for several years (California Burrowing Owl Consortium, 1993). In northern California, the largest remaining population of burrowing owls occurs in the San Francisco Bay Area and the central portion of the Central Valley (Yolo and Sacramento Counties south to Merced County (Alameda County Community Development Agency, 1998). Recent declines of this species have been noted, especially in the San Joaquin Valley (Small, 1994). Loss of breeding habitat is considered the primary reason for the population declines, and intensive pressure for urban development of open, flat



grasslands and fields continues to conflict with the management of remaining populations (California Burrowing Owl Consortium, 1993). Nesting and wintering burrowing owls have been found regularly throughout much of the Altamont Pass area (Alameda County Community Development Agency, 1998), and the project area contains suitable habitat for this species.

**Ferruginous Hawk** – The ferruginous hawk is a federal Species of Special Concern. The ferruginous hawk does not nest in California (Alameda County Community Development Agency, 1998), but it is a fairly common winter visitor from mid-September to early April. This species is most often found in interior areas in lowlands, plateaus, valleys, plains, rolling hills of grassland, agricultural land, ranches, and the edges of deserts (Small, 1994). It preys on ground squirrels and other small mammals, and the primary cause of this species decline is the conversion of grasslands for agriculture and urban development (Alameda County Community Development Agency, 1998). There is suitable habitat for ferruginous hawk in the project area.

**Swainson's Hawk** – Swainson's hawk is a state-listed threatened species. This species was formerly fairly common as a spring transient from early March to May. Currently, it is an uncommon spring and fall transient and an uncommon to rare breeding summer visitor (Small, 1994). It is distributed in California in the lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley, with the highest nesting densities occurring near Davis and Woodland, Yolo County (Alameda County Community Development Agency, 1998). Swainson's hawks arrive in their breeding areas in the Central Valley and Great Basin from early March to early April and return to their southern winter range by late August or early September (Thelander, 1994). Swainson's hawks nest in oaks or cottonwoods in or near riparian habitats, and forage in grasslands, irrigated pastures, and grain fields (Alameda County Community Development Agency, 1998). They require large expanses of grassland foraging habitat, and foraging territories may encompass thousands of acres. Small mammals, birds, and insects are the usual prey for this species (Thelander, 1994). The project region contains suitable foraging habitat and marginal nesting habitat for Swainson's hawks.

**Mountain Plover** – Mountain plovers are a federally proposed threatened species and a state Species of Special Concern. Their range is primarily south of the southern portion of the Sacramento Valley and on the plains and in cismontane valleys on the west side of and to the west of the Central Valley, from about Yolo County south to Kern County (Small, 1994). The winter range of the mountain plover is primarily in the Sacramento, San Joaquin, and Imperial Valleys of California where they spend about 75% of their time on plowed fields but prefer heavily grazed annual grasslands or burned fields (USFWS, 2000d). In California, mountain plovers are reported in the greatest numbers in the Central Valley south of Sacramento and west of US Hwy 99 and in the Imperial Valley in southern California (USFWS, 1999b). There is suitable wintering habitat for the mountain plover in the project area, although a query of the CNDDDB/RareFind database revealed no known locations of the species within the project quads.

**White-tailed Kite** – The white-tailed kite is a CDFG fully protected species. It occurs in lowland areas west of the Sierra Nevada from the head of the Sacramento Valley south to San Diego County (Small, 1994), and inhabits low foothills or valley areas with valley or live oaks, riparian areas, and marshlands near open grasslands for foraging. It is known to breed and winter throughout lowland California, including the Central Valley and central and southern coastal valleys (Alameda County Community Development Agency, 1998). Ideal habitat for the species is characterized by open cultivated and marshy bottomlands with scattered tall trees, savannah, grassy foothill slopes interspersed with oaks, agricultural areas with trees for windbreaks, orchards, and roadside verges (Small, 1994). Population declines have been attributed to the conversion of native lands to agricultural and urban lands, but because of the species increased use of suboptimal habitats, it is now fairly common in some areas of California, such as the Central Valley. Additionally, the white-tailed kite is a known year-round resident of Altamont Pass and surrounding areas (Alameda County Community Development Agency, 1998). The project area provides suitable foraging habitat for this species with less suitable breeding habitat.

**Little Willow Flycatcher** – The little willow flycatcher is a federal Species of Special Concern and a state-listed threatened species. The little willow flycatcher commonly nests in mountainous habitats in northern and central California (Thelander, 1994). Breeding habitat requirements are riparian woodlands along stream and river courses, in broader canyons and floodplains, around mountain meadows, and at moist mountainside springs and seepages with dense stands of willows 3- to 8-feet high (Small, 1994). They prefer open to semi-open brushy areas, and they are known to nest predominantly in willows and other shrubby plants bordering streams, ponds, and wet meadows. Little willow flycatchers return to California breeding areas in late May and June (Thelander, 1994). The project area is out of the known breeding range of the little willow flycatcher, and a query of CNDDDB/RareFind revealed no known locations for this species on the project quads. There is also no suitable habitat for this species in the project area.

**California Horned Lark** – The California horned lark is a state Species of Special Concern. Horned larks (of a variety of subspecies) are a fairly common to common resident and spring and fall transient, and a locally abundant winter visitor from mid-October to early February. They inhabit desert scrub, short-grass plains, grasslands interrupted by bare ground, grassy hillsides, mesas and ridges, plowed agricultural land, sagebrush flats, alpine meadows and fell fields, and alkali flats. They have been known to assemble by the tens and hundreds of thousands (of a number of subspecies) in the dry, flat, treeless interior valleys and coastal plains of California (Small, 1994). There is suitable habitat for this species within the project area.

**Greater Sandhill Crane** – The greater sandhill crane is a state Species of Special Concern. This subspecies is known to winter and breed in California from late-September to early-April. Wintering birds require agricultural lands, grain fields, stubble fields, grasslands, and open areas at edges of freshwater lakes and rivers. Breeding birds require open country, usually grassy areas or wet, grassy meadows and shallow marshes. The dominant wintering

area for this subspecies is between Chico Butte and the Pixley National Wildlife Refuge (Small, 1994). There is not suitable breeding or overwintering habitat for this species in the project area, and a query of CNDDDB/Rarefind provided no known locations on the project quads.

**Bald Eagle** – The bald eagle is a federally-listed endangered species. The bald eagle breeds predominantly in low mountain areas in the northern one-third of the state. It winters throughout the state, except in the highest mountains and driest deserts. They require large bodies of water for foraging, and usually build their nests within one-mile of the body of water they use for foraging (Thelander, 1994). Nesting habitat includes Ponderosa pine and mixed conifer forests associated with a lake, river, or other water body. Winter habitat includes rivers, lakes, and reservoirs that support adequate fish or waterbird prey and have mature trees or large snags available for perch and roost sites (Alameda County Community Development Agency, 1998). There are no known bald eagle locations within the project quads (based on query of CNDDDB/RareFind), and the project area does not provide suitable nesting or foraging habitat for this species.

**White-faced Ibis** – The white-faced ibis is a federal Species of Special Concern. They inhabit freshwater marshes, borders of lakes, cultivated fields (especially when irrigated or flooded), irrigation canals and ditches, and very rarely saltwater marshes and estuaries (Small, 1994). They feed in freshwater marshes where they wade and probe in shallow water feeding on crayfish, crabs, frogs, insects, snails, and fish. They nest in small colonies, and their nest is composed of a deep cup of dead reeds and sticks lined with grass on a floating mat of dead plants or attached to bulrushes and shrubs several feet above the water (Stokes and Stokes, 1996). There is not suitable habitat for this species within the project area.

**Silvery Legless Lizard** – The silvery legless lizard is a federal Species of Special Concern. It inhabits coastal dunes, valley foothills, woodlands, and grasslands. It is also known in coastal sage scrub, oak woodlands, and loose alluvial soils. The silvery legless lizard requires moist alluvial soils with plenty of surface litter and do not occur in heavy clay soils (USGS, 2001). There is not appropriate habitat for this species within the project area.

**Western Pond Turtle** – The western pond turtle, northwestern pond turtle, and southwestern pond turtle are federal Species of Special Concern. Additionally, the western pond turtle is a state Species of Special Concern and is fully protected by CDFG. Western pond turtles inhabit permanent and ephemeral ponds, marshes, reservoirs, and irrigation ditches that support aquatic vegetation, and streams with pools, rocks, logs, and riparian vegetation that provide basking sites and escape cover. Pond turtles are highly aquatic, and typically only leave the water to bask, deposit eggs in stream banks or upland areas, hibernate, or escape drying water bodies. They feed on aquatic plants, fish, amphibians, invertebrates, and carrion. Factors contributing to the decline of this species and subspecies include extensive loss of wetlands, alteration of aquatic and adjacent habitats, commercial exploitation, and introduction of exotic predator species (Jones and Stokes Assoc., 1994). There is not suitable habitat for this species within the project area.

**San Joaquin Whipsnake** – The San Joaquin whipsnake is a federal and state Species of Special Concern and is fully protected by CDFG. This species occurs in open, dry vegetative associations with little or no tree cover, and in the San Joaquin Valley it occurs in valley grassland and saltbush scrub habitats. The known range of the San Joaquin whipsnake extends from west of the Sacramento Valley south to the Grapevine in the Kern County portion of the San Joaquin Valley and west into the inner South Coast Ranges. The San Joaquin whipsnake eats lizards and robs nests of birds and mammals (Jennings and Hayes, 1994). There is suitable habitat for the San Joaquin whipsnake within the project area.

**Alameda Whipsnake** – The Alameda whipsnake is a federally-listed threatened species. Alameda whipsnake habitats are generally restricted to coastal sage scrub areas (US DOE, 2000). Alameda whipsnakes inhabit the inner coast ranges in western and central Contra Costa and Alameda Counties. They are typically found in northern coastal scrub, coastal sage scrub, and chaparral plant communities, but may also occur in adjacent grasslands and oak woodlands. They prefer open canopy stands and habitats with woody debris and exposed rock outcrops (USFWS, 1997a). The home range for the Alameda whipsnake includes scrub communities, and they rarely venture more than 50-meters from scrub habitat (USFWS, 2000a). Occupied areas usually support a prey base of at least two lizard species, including the western fence lizard (*Sceloporus occidentalis*), and contain rock outcrops with deep crevices or abundant rodent burrows for retreat (Alameda County Community Development Agency, 1998). Critical habitat for the Alameda whipsnake has been identified in Contra Costa, Alameda, San Joaquin, and Santa Clara Counties (USFWS, 2000a); however, there is not suitable habitat for this species within the project area.

**California Horned Lizard** – The California horned lizard is a federal and state Species of Special Concern and is fully protected by DFG. This species occurs throughout much of California west of the deserts. It inhabits a variety of habitats, including scrubland, grassland, riparian, woodlands, and open coniferous forests where soils are friable for digging (USDOE, 1992). The species has a spotty distribution from Shasta County southward along the edges of the Sacramento Valley into much of the South Coast Ranges and the San Joaquin Valley (Jennings, 1988). California horned lizards have been recorded preying on ants and beetles, but probably eat many other insects as well. There have been reports of California horned lizards within 2-miles of the project location (CDFG, 2001a), and there were three California horned lizards observed during field surveys at LLNL Site 300 in 1991 (USDOE, 1992). The grazed grasslands of the project area provide suitable habitat for this species.

**Giant Garter Snake** – The giant garter snake is a federally and state-listed threatened species. Giant garter snakes are endemic to the valley floor wetlands in the Sacramento and San Joaquin Valleys. They are currently known to inhabit portions of the rice production zones of the Sacramento, Sutter, Butte, Colusa, and Glenn Counties; along the western border of the Yolo Bypass in Yolo County; and along the eastern fringes of the Sacramento-San Joaquin River delta from the Laguna Creek-Elk Grove region of central Sacramento County southward to the Stockton area of San Joaquin County (USFWS, 1993). General habitat requirements for the giant garter snake include water, including permanent water that persists through the

summer months; emergent aquatic vegetation and steep, vegetated bank for cover; and an abundant food supply. Other important components include adjacent upland areas with small mammal burrows or other suitable winter retreats and habitat diversity. The giant garter snake occurs in a combination of permanent and seasonal freshwater habitats and conducts most of its activities within the immediate vicinity of water. They are often found between the top of the water level and the top of the adjacent banks. Primary habitat types used by giant garter snakes include permanent and seasonal marshes, flooded rice fields, and water structures associated with rice agriculture, such as irrigation canals and drainage ditches (USFWS, 1993). Diking, channeling, and draining wetlands has fragmented and reduced the amount of suitable habitat for this species. Introduced predators, such as bullfrogs, largemouth bass, and catfish may also contribute to the decline of the species. Livestock grazing along the edges of water sources also threatens the giant garter snake by reducing the amount of vegetative cover needed for refuge from predators (Thelander, 1994). There is no suitable habitat for this species within the project area. Additionally, a query of CNDDDB/RareFind provided no known locations of the species on the project quads (CDFG, 2001a).

**California Tiger Salamander** – The California tiger salamander is a federal candidate species, a state Species of Special Concern, and is fully protected by CDFG. It is most commonly associated with grasslands in rolling terrain or foothills that contain suitable underground retreats, such as burrows of small mammals. The California tiger salamander breeds in vernal pools or other small, temporary waters that fill during winter rains and are dry by mid-summer. They can also utilize artificial impoundments if they do not contain fish (USFWS, 2000c) and slow-moving streams (Alameda County Community Development Agency, 1998). California tiger salamander adults may migrate long distances between summering and breeding sites; the distance is dependent on topography and vegetation, the distribution of ground squirrel or other rodent burrows, and climatic conditions. Migration to breeding ponds occurs during rainy nights in winter. These ponds must hold water for approximately 10 weeks to allow sufficient time for breeding and metamorphosis (USFWS, 2000c), or until approximately May 15 (Monk, 2001). Historically, it is believed that California tiger salamanders were distributed in grassland habitats throughout much of the state (Alameda County Community Development Agency, 1998). Currently, they are distributed throughout the Central Valley, including the Sierra Nevada foothills up to approximately 1,000-foot elevation, and in the coastal region from Butte County south to Santa Barbara County (Alameda County Community Development Agency, 1998). Populations of the California tiger salamander have declined primarily from conversion of valley and foothill grassland habitats to agricultural and urban uses (Stebbins, 1985). Additionally, the introductions of the bullfrog and nonnative fishes have contributed to the decline of this species (USFWS, 2000c). The closest known locations for the California tiger salamander are approximately 2-miles to the west of the project area (CDFG, 2001a). The project area is in the range of the California tiger salamander and provides suitable summer habitat; however, there are no breeding ponds within the project area.

**California Red-legged Frog** – The California red-legged frog is a federally-listed threatened species, a state Species of Special Concern, and fully protected by CDFG. The historic range of the California red-legged frog extended from the coast in the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico. Currently, California red-legged frogs are locally abundant in some portions of the San Francisco Bay area and the Central Coast, and there are isolated occurrences in the Sierra Nevada, northern Coast, and northern Transverse Ranges. California red-legged frogs use a variety of habitats, including various aquatic, riparian, and upland habitats. More specifically, this species has been documented in ephemeral ponds, intermittent streams, seasonal wetlands, springs, seeps, permanent ponds, perennial creeks, manmade aquatic features, marshes, dune ponds, lagoons, riparian corridors, blackberry thickets, nonnative annual grasslands, and oak savannas (USFWS, 2000e). Within these habitats, the presence of one or more of the following is an important indicator that the site may provide foraging or breeding habitat for the California red-legged frog: willows, cattails, and woody riparian vegetation (USFWS, 2001); however, the absence of these vegetative species does not rule out the possibility that the site provides habitat for California red-legged frogs (USFWS, 1997b). Additionally, they are most likely to persist in areas with multiple breeding areas that are within an assemblage of habitats used for dispersal (USFWS, 2001). The primary reasons for the decline of the species are alteration of stream and wetland habitats, habitat destruction, and competition and predation by introduced species of fish and bullfrogs (Alameda County Community Development Agency, 1998). In the San Joaquin Valley it is believed that wetland reclamation and species harvest were the main reasons for the decline of the species (Jennings and Hayes, 1984). The nearest known locations of California red-legged frogs are approximately 2-miles west of the project location (CDFG, 2001). The Altamont Hills (northwest of the project location) is one of three major remaining population centers for the species, and California red-legged frogs have been recorded in the Kellogg Creek watershed in 1980 and 1995. Populations were also identified in Corral Hollow Creek and in stock ponds and pools in the Del Valle watershed (approximately 6 miles south of the project location) in 1990 (USDOE, 1992) and in 1995 (Alameda County Community Development Agency, 1998). There is potential breeding habitat for California red-legged frogs within the project area. Additionally, Patterson Run Creek may provide a migration corridor for the species (Monk, 2001)

**Foothill Yellow-legged frog** – The foothill yellow-legged frog is a federal Species of Special Concern. It is found in or near rocky streams in a variety of habitats, including valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow type habitats. During cold weather, individuals seek cover under rocks in the streams or on shore within a few meters of the water. The foothill yellow-legged frog is distributed throughout the Coast Ranges from the Oregon border south to the Transverse Mountains of Los Angeles County, and in most of northern California west of the Cascade crest, and along the Sierra Nevada south to Kern County. There is also a known isolated population in San Joaquin County on the floor of the Central Valley (Morey, 2001).

There is not suitable habitat for this species within the project area, and there are no known locations for this species within the project quads (CDFG, 2001a).

**Western Spadefoot Toad** – The western spadefoot toad is a federal and state Species of Special Concern and fully protected by CDFG. The western spadefoot toad ranges throughout the Central Valley and adjacent foothills. This species occurs primarily in grasslands, but occasional populations also occur in valley-foothill hardwood woodlands; however, grasslands with shallow, temporary pools are optimal habitats (Morey, 2001b). Stock tanks and ponds may also be used for breeding habitat (Monk, 2001). Most of the year is spent in underground burrows up to 36-inches deep, which they construct themselves. They are also known to utilize mammal burrows, and some may hide in drying mud cracks or under boards and other surface objects, including decomposing cow dung (Morey, 2001b). The project area provides marginal habitat for this species; there is a stock tank on the site that may serve as a breeding pond, and there are numerous small mammal burrows throughout the project area.

**Vernal Pool Invertebrates** – There are a number of vernal pool invertebrates that have been identified as possibly occurring within the project area if vernal pools are present. These include the longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and the California Linderiella fairy shrimp. There are no vernal pools within the project area; therefore, there is no suitable habitat for these species within the project area.

**Valley Elderberry Longhorn Beetle** – The valley elderberry longhorn beetle is a federally-listed threatened species. This beetle is associated with elderberry trees for its entire life cycle: eggs are laid in crevices in the bark, the larvae tunnel into the tree and eat interior wood, the adults from pupation inside the wood, and then they eat the foliage of the tree. Historically, this species ranged throughout the Central Valley. In the Central Valley, elderberry trees are associated with riparian forests that occur along rivers and streams. Recent surveys have revealed the beetle in only a few scattered locations along the Sacramento, American, San Joaquin, Kings, Kaweah, and Tule rivers and tributaries. The reasons for the decline of valley elderberry longhorn beetle populations are the clearing of riparian forest for agricultural and urban development and the extensive use of pesticides and grazing which have degraded the remaining riparian patches (UC Berkeley, 2001). There are no elderberry trees within the project area; therefore, there is not suitable habitat for this species within the project area.

**Curved-foot Hygrotus Diving Beetle** – The curved-foot Hygrotus diving beetle is a state Species of Special Concern. It is known to occur at the Sacramento River Delta, and its habitat requirements include vernal pools and wetlands. A query of the CNDDB/RareFind revealed no known locations for this species within the Midway or Clifton Court Forebay quads, and there is not suitable habitat for this species within the project area.

**Molestan Blister Beetle** – The molestan blister beetle is a federal Species of Special Concern. It has primarily been collected from vernal pool vegetation. There are no known locations for this species within the Midway or Clifton Court Forebay quads, and there is not suitable habitat for this species within the project area.

### 5.3.4 Affected Environment

This section provides an overall description of the affected environment for the following resources:

- Vegetation and Special-Status Plant Species
- Wetlands
- Wildlife and Special-Status Animal Species

#### 5.3.4.1 Vegetation and Special-Status Plant Species

Habitat assessment and floristic surveys were conducted in May 2001 for proposed project site and proposed linear facilities, including the proposed water supply pipeline and pump station, the proposed transmission line, and the eastern portion of the proposed natural gas pipeline (permission has not been granted to survey the western portion of the proposed natural gas pipeline). Habitat assessment and floristic surveys were conducted in August 2001 for the proposed “Ravenswood line” relocation. No special-status plant species were observed within the project area during the surveys. Additionally, the project area is disturbed by grazing and agricultural activities. These activities create unfavorable habitats for special-status plant species.

General vegetation and habitat types for project components are identified in Figure 5.3-2. Figure 5.3-3 is a map of biological resources at a scale of 1-inch to 500-feet (1:6,000). Table 5.3-3 provides a list of plant species observed within the project area.

**Table 5.3-3. Plant Species Observed in the Project Vicinity**

Scientific Name	Common Name
<i>Amaranthus spp.</i>	Pigweed
<i>Amsinckia spp.</i>	Fiddleneck
<i>Apium graveolens</i>	Celery
<i>Artemisia douglasiana</i>	Mugwort
<i>Asclepias fascicularis</i>	Narrow-leaf Milkweed
<i>Astragalus spp.</i>	Astragalus
<i>Atriplex semibaccata</i>	Australian Saltbush
<i>Avena barbata</i>	Slender Oat grass
<i>Brassica nigra</i>	Black Mustard
<i>Bromus diandrus</i>	Ripgut grass
<i>Bromus hordeaceus</i>	Brome
<i>Bromus madritensis</i>	Red Brome
<i>Carduus pycnocephalus</i>	Italian Thistle
<i>Chamaesyce spp.</i>	Prostrate spurge
<i>Cirsium vulgare</i>	Bull Thistle
<i>Convolvulus arvensis</i>	Orchard Morning-glory or bindweed
<i>Conyza canadensis</i>	Horseweed
<i>Cynodon dactylon</i>	Bermuda grass
<i>Datura wrightii</i>	Jimson Weed
<i>Epilobium spp.</i>	Fireweed
<i>Eremocarpus setigerus</i>	Turkey mullein



**Table 5.3-3. Plant Species Observed in the Project Vicinity**  
(Continued)

Scientific Name	Common Name
<i>Erodium cicutarium</i>	Red-stem Storksbill
<i>Eschscholzia californica</i>	California Poppy
<i>Gnaphalium bicolor</i>	Pearly Everlasting
<i>Grindelia spp.</i>	Gumweed
<i>Hordeum spp.</i>	Barley
<i>Juncus spp.</i>	Rush
<i>Lactuca serriola</i>	Prickly lettuce
<i>Lolium multiflorum</i>	Italian Ryegrass
<i>Lupinus spp.</i>	Lupine
<i>Malva neglecta</i>	Common Malva
<i>Marah macrocarpus</i>	Wild Cucumber
<i>Marrubium vulgare</i>	Horehound
<i>Medicago sativa</i>	Alfalfa
<i>Melilotus indica</i>	Sourclover
<i>Polygonum arenastrum</i>	Common Knotweed
<i>Polypogon monspeliensis</i>	Beard grass
<i>Populus fremontii</i>	Cottonwood
<i>Rorippa spp.</i>	Water Cress
<i>Rumex crispus</i>	Curly dock
<i>Salix lasiolepis</i>	Arroyo Willow
<i>Salsola tragus</i>	Russian Thistle or Tumbleweed
<i>Senecio vulgaris</i>	Common Groundsel
<i>Silybum marianum</i>	Milk Thistle
<i>Solanum xanti</i>	Nightshade
<i>Sonchus oleraceus</i>	Common Sowthistle
<i>Typha latifolia</i>	Cat-tail
<i>Urtica dioica</i>	Stinging nettle
<i>Urtica urens</i>	Dwarf Nettle

### Project Site and Site Access Road

The site and the proposed site access road are dominated by nonnative annual grassland, the dominant species of which is *Bromus diandrus*. The area has also been extensively grazed, revealing large patches of bare ground. There are no special-status plants within the proposed project site, site access road, or construction areas.

### Natural Gas Pipeline

The proposed natural gas pipeline route predominantly crosses grazed, nonnative annual grassland (Figure 5.3-2). It also crosses and parallels Patterson Run Creek at the western portion of the pipeline route, and crosses Interstate Highway 580, the California Aqueduct, and the Delta-Mendota Canal at the eastern portion of the pipeline route. Patterson Run Creek within the western portion of the pipeline area contains dense riparian trees, such as willows and cottonwoods. Patterson Run Creek also flows between the California Aqueduct and the Delta-Mendota Canal. At this location Patterson Run Creek has been modified and impounded, and the creek is approximately 10- to 15-feet deep and 20-feet wide. The creek

contains native, wetland vegetation, such as cattails (*Typha sp.*) and willows (*Salix sp.*). East of Patterson Run Creek, the habitat changes to cultivated agriculture. There are no special-status species identified within the eastern portion of the natural gas pipeline corridor. (The western portion of the natural gas pipeline corridor was not surveyed due to lack of landowner's permission to survey on private property.)

#### **Electrical Transmission Line**

The proposed electrical transmission line predominantly crosses nonnative annual grassland from the project site to the northeast side of the PG&E Tesla Substation. The transmission line also crosses Patterson Run Creek. The creek bed is approximately 10-feet wide in this area and is bordered by willows (*Salix sp.*). There are no special-status plant species identified within the electrical transmission line corridor.

#### **Ravenswood Transmission Line**

The Ravenswood transmission line is located on the southwest side of the Tesla Substation expansion area. The line crosses nonnative annual grassland, Patterson Pass Road, and Patterson Run Creek. Patterson Run Creek in the vicinity of the Ravenswood transmission line is approximately 15-feet wide. There is flowing water with some areas of pooled water, and abundant wetland vegetation, such as cattails (*Typha sp.*), water cress (*Rorippa sp.*), and rush (*Juncus sp.*). There are no special-status plant species identified within the Ravenswood transmission line corridor.

#### **Water Supply Pipeline and Water Supply Pump Station**

The proposed water supply pipeline parallels Midway Road to connect with the California Aqueduct north of the project site. The pipeline may cross grazed, nonnative annual grassland. There are no special-status plant species present within the water supply pipeline corridor; however, there is potential for invasive plant species within this area.

The water supply pump station will be adjacent to the California Aqueduct and consists of nonnative annual grassland. There are no special-status plant species present within the pump station construction area.

##### **5.3.4.2 Wetlands**

Wetlands were delineated in the field and mapped on USGS 7.5' topographic maps at a scale of one-inch equals 2000-feet (1:24,000) (Figure 5.3-2). The wetlands in the project area are restricted to Patterson Run Creek. Table 5.3-4 lists the wetland plant species observed within the project area.

**Table 5.3-4. Wetland Plant Species Observed within the Project Area**

Scientific Name	Common Name	Indicator Status	Location
<i>Artemisia douglasiana</i>	Mugwort	FACW	Transmission line
<i>Avena sp.</i>	Oats	--	Transmission line
<i>Bromus madritensis ssp. rubens</i>	Foxtail chess	--	Transmission line
<i>Grindelia camporum</i>	Great Valley gumplant	FAC	Transmission line
<i>Hordeum brachyantherum ssp. californicum</i>	Barley	FAC	Transmission line
<i>Juncus sp.</i>	Rush	FACW	Transmission line, Ravenswood Line
<i>Lolium perenne</i>	Perennial ryegrass	FAC	Transmission line
<i>Polypogon monspeliensis</i>	Annual beard grass	FACW	Transmission line
<i>Populus fremontii</i>	Fremont cottonwood	FACW	Transmission line
<i>Rorippa sp.</i>	Water cress	FACW	Ravenswood Line
<i>Rumex crispus</i>	Curly dock	FACW	Transmission line
<i>Salix exigua</i>	Narrow-leaved willow	OBL	Natural gas pipeline
<i>Salix lasiolepis</i>	Arroyo willow	FACW	Natural gas pipeline, transmission line
<i>Typha sp.</i>	Cattail	OBL	Natural gas pipeline

FACW = plants that occur in wetlands 67 - 99% of the time

FAC = plants that occur in wetlands 34 - 66% of the time

OBL = plants that occur in wetlands 99% of the time

### Project Site

The project site contains no wetlands. USGS 7.5' (1:24,000-scale) topographic maps dated 1953 (photo revised 1980) reveal an intermittent stream in the southern portion of the site. Cultivation and grazing activities have modified this feature and it no longer supports wetland plant species or has the hydraulic or soils characteristics of a wetlands.

### Natural Gas Pipeline

The only wetland delineated within the natural gas pipeline corridor is Patterson Run Creek (Figure 5.3-2). The eastern portion of the creek crossed by the pipeline corridor has been modified and impounded. Wetland vegetation occurs in the creek and is dominated by cattails, an obligate wetland species. The western portion of the creek has not been delineated due to lack of permission by the landowner to survey on private property. The California Aqueduct and Delta-Mendota Canal are man-made features with concrete bed and bank and no vegetation.

**Electrical Transmission Line**

The only wetland delineated within the electrical transmission line corridor is Patterson Run Creek. Willows, a facultative-wet species, are the dominant vegetation species. The portion of Patterson Run Creek crossed by the transmission line route is ephemeral in nature and appears to hold water for short periods.

**Ravenswood Transmission Line**

Patterson Run Creek within the vicinity of the Ravenswood transmission line is dominated by wetland species, including cattails, rushes, and watercress. There is flowing water in this portion of the creek, as well as pools of deeper water.

**Water Supply Pipeline**

The proposed water supply pipeline crosses no wetlands.

**5.3.4.3 Wildlife and Special-Status Animal Species****Project Site**

The proposed project site including site access road are located on 60-acres of open, annual grassland. There are no shrubs or trees present on the site, and the area is characterized by dry, nonnative grass and weed species, predominantly ripgut brome. The site is used extensively for grazing, and there are patches of bare soil throughout the project site. There is also a stock tank on the proposed project site, which contains water but no associated wetland vegetation. There are numerous small mammal burrows, and ground squirrels and cottontail rabbits are prevalent on the site. Transmission lines also cross the site, which provide perching sites for foraging raptors. The availability of water, small mammal burrows, perching sites, and prey provide suitable foraging habitat for special-status wildlife species such as the San Joaquin kit fox, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, California horned lizard, California tiger salamander, and western spadefoot toad. Of these species, only burrowing owls have been observed on the project site.

Surveys for burrowing owls were conducted in May and June 2001. During these surveys, eight active burrows were identified on the project site with at least one mating pair of burrowing owls present on the site (Figure 5.3-3).

A survey for San Joaquin kit fox potential natal dens was conducted in June 2001. This survey revealed 17 potential dens on the site. There was no sign of kit fox activity, and camera stations placed on four of the burrows provided no evidence that kit fox occupied the site.

A list of all wildlife species observed on the project site is presented in Table 5.3-5.

**Table 5.3-5. Wildlife Species Observed Within the Project Area**

Scientific Name	Common Name
<b>BIRDS</b>	
<i>Cathartes aura</i>	Turkey Vulture
<i>Charadrius vociferus</i>	Killdeer
<i>Corvus brachyrhynchos</i>	American Crow
<i>Euphagus cyanocephalus</i>	Brewer's Blackbird
<i>Agelaius phoeniceus</i>	Red-winged Blackbird
<i>Sturnella neglecta</i>	Western Meadowlark
<i>Tachycineta thalassina</i>	Violet-green Swallow
<i>Lanius ludovicianus</i>	Loggerhead Shrike
<i>Meleagris gallopavo</i>	Wild Turkey
<i>Athene cunicularia</i>	Burrowing Owl
<b>MAMMALS</b>	
<i>Sylvilagus audubonii</i>	Desert Cottontail
<i>Lepus californicus</i>	Black-tailed Jackrabbit
<i>Microtus californicus</i>	Meadow Vole
<b>REPTILES</b>	
<i>Pituophus melanoleucus</i>	Pine-Gopher Snake
<i>Sceloporus occidentalis</i>	Western Fence Lizard
<b>INVERTEBRATES</b>	
unknown	Grasshopper
<i>Gryllus sp.</i>	Cricket

### Natural Gas Pipeline

Habitats present within the proposed natural gas pipeline corridor are nonnative annual grassland, agriculture, and wetland. The grassland in this area is disturbed by grazing, and there are transmission lines and windmills in the vicinity of the pipeline corridor. Although the potential for special-status wildlife species is limited, there is the potential for the following species to occur within the pipeline corridor: San Joaquin kit fox, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, California horned lizard, California tiger salamander, and tri-colored blackbird. None of these species were documented within the eastern portion of the pipeline corridor or adjacent habitats during surveys conducted in May and June 2001. (The western portion of the pipeline corridor has not been surveyed due to lack of permission by the landowner to conduct surveys on private property.)

All wildlife species observed within the pipeline corridor and adjacent areas are presented in Table 5.3-5.

**Transmission Line**

The proposed transmission line crosses nonnative annual grassland. The area is grazed, and there are no trees or shrubs present in the grassland habitat. There are small mammal burrows, and ground squirrels and cottontail rabbits are present within the corridor. There are transmission lines crossing the area that could provide perching sites for foraging raptors. The grassland habitat in this area could potentially provide habitat for the following special-status species: San Joaquin kit fox, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, California horned lizard, and California tiger salamander.

The transmission line crosses Patterson Run Creek. Patterson Run Creek in this area is seasonally wet and supports large riparian trees, such as willows. There is no evidence of standing water, such as wetland vegetation or cattle tracks in the creekbed, but there is evidence of flashy flows and high water in the form of large debris caught in culverts. Therefore, the creek does not provide suitable habitat for special-status wildlife species. However, it could provide a migration corridor for the red-legged frog. Additionally, the large riparian trees provide potential nesting habitat for Swainson's hawk and perching sites for foraging raptors.

**Ravenswood Transmission Line**

The Ravenswood transmission line crosses nonnative annual grassland. The area is grazed and the southern half of the line is currently disturbed by the expansion of the Tesla Substation. The grassland habitat on the southern portion of the proposed transmission line contains many small mammal burrows, and ground squirrels and cottontail rabbits are prevalent. There are also transmission lines crossing the entire area that could provide perching sites for foraging raptors. The grassland habitat in this area could potentially provide habitat for the following special-status species: San Joaquin kit fox, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, California horned lizard, and California tiger salamander. The only trees present occur at Patterson Run Creek.

The proposed Ravenswood transmission line will also cross Patterson Run Creek. The creek in this area is perennially wet, flowing, and supports abundant wetland vegetation such as cattails, rushes, and watercress. There are also pools of deeper water in the area. The creek in this area could provide suitable habitat for the California red-legged frog. The trees along the creek could provide nesting habitat for Swainson's hawk and perching sites for foraging raptors.

Surveys for burrowing owls were conducted in August 2001. During these surveys, there was no evidence of burrowing owl activity identified. However, evidence of potential kit fox activity was documented near the southernmost portion of the proposed Ravenswood transmission line. This evidence included one burrow of sufficient size and shape (approximately 7-inch diameter, keyhole entry, loose soil mound resulting from digging),

recent tracks in the loose soil around the burrow entry, and fresh bone (including a crushed ground squirrel skull) and fur fragments around the entrance to the burrow.

### **Water Supply Pipeline and Water Supply Pump Station**

A small portion of the proposed water supply pipeline crosses nonnative annual grassland. There are many small mammal burrows within the pipeline corridor, and ground squirrels and cottontail rabbits were observed within and adjacent to the pipeline corridor. Power lines parallel the proposed pipeline corridor, which can be used as perching sites for foraging raptors. Special-status wildlife species for which the pipeline corridor potentially provides suitable habitat include San Joaquin kit fox, burrowing owl, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, California horned lizard, and California tiger salamander. Of these species, only burrowing owls have been observed within the pipeline corridor (Figure 5.3-3).

Surveys for burrowing owls were conducted in May and June 2001. Surveys were conducted for 500-feet on either side of the proposed water supply pipeline corridor. There were two active burrows identified; one on the west side of the corridor and one on the east side of the corridor (Figure 5.3-3). There was also one mating pair of burrowing owls observed on the burrow on the west side of the pipeline corridor.

Lists of all wildlife species that have been observed within and adjacent to the proposed water supply pipeline are presented in Table 5.3-5.

The pump station will result in minimal permanent disturbance since a majority of the equipment will be buried. The anticipated area to be fenced is approximately 50 ft. by 50 ft. directly adjacent to the aqueduct. Surveys of this area conducted in May 2001 revealed no special-status species. The area lies near the intersection of Midway Road and Grant Line Road and is periodically disturbed by aqueduct maintenance activities. Therefore, it provides poor habitat for special-status species.

#### **5.3.5 Environmental Impacts**

This section summarizes the direct and indirect effects of construction, operation, and maintenance activities on the biological resources potentially affected by the proposed project.

Impacts to biological resources may result from the following:

- Habitat loss/disturbance
- Direct impacts to special-status species
- Project operation

Appendix G of California Environmental Quality Act (CEQA) addresses the significance criteria with respect to biological resources [Public Resources Code (PRC) Sections 21000et seq.]. An impact would be considered significant if it would:

- Have a substantial adverse effect on any federal or state listed species identified as a endangered, threatened, or candidate.
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations.
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local ordinances protecting biological resources.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

#### 5.3.5.1 Habitat Loss/Disturbance

Construction of the TPP could result in the temporary and permanent loss of habitats including nonnative annual grassland, wetlands, and agricultural areas. A summary of the potential project temporary and permanent impacts to these habitats is provided in Table 5.3-6.

**Table 5.3-6. Habitat Loss/Disturbance Impacts Summary (in acres)**

Project Component	Wetlands		Nonnative Annual Grassland		Agriculture	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
Power Laydown Area Plant Site and Construction	0	0	25	40	0	0
Transmission Line	0	0	0.1	0.9	0	0
Ravenswood Transmission Line	0	0	0.1	0.4	0	0
Natural Gas Pipeline	0	0	0	28.5	0	7.7
Water Supply Pipeline	0	0	0	6.3*	0	0
Water Supply Pump Station	0	0	0.5	0	0	0
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>25.7</b>	<b>76.1*</b>	<b>0</b>	<b>7.7</b>

\* The remaining approximately 4.0 acres is within rural residential areas.

#### Project Site and Adjacent Construction Laydown Area

**Vegetation.** Project facility construction would result in the permanent loss of approximately 25-acres of nonnative annual grassland habitat. This includes the area within the fence line of the power generation and switchyard facility, plus the detention basin area. An additional 40-acres would be temporarily impacted by construction laydown, topsoil storage, construction office area, and parking areas (see Table 3.7-3).



**Wildlife Habitat.** Construction of the power plant on the site would eliminate up to 25-acres of nonnative annual grassland habitat. Elimination of this habitat would displace the wildlife that live there, including species such as the California ground squirrel, cottontail rabbit, gopher snake, western fence lizard, and American crow. None of these species is uncommon and the affect of removing this grassland habitat is not considered significant.

The nonnative annual grassland habitat on the proposed power plant site does, however, provide nesting and foraging habitat for burrowing owls; therefore, there will be a direct impact on this species. The site may also provide foraging habitat for a number of special-status species, including the San Joaquin kit fox, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, and California horned lizard, and this area may also provide upland habitat for the California tiger salamander. The project will cause a loss of foraging habitat for these species; however, there is adequate nonnative annual grassland habitat available locally.

### **Natural Gas Pipeline**

**Vegetation.** The primary impact during construction and routine maintenance of the proposed natural gas pipeline includes temporary alteration and loss of vegetative cover in nonnative annual grassland and agricultural habitats. The proposed natural gas pipeline is 2.8-miles long. There will be a permanent 50-foot easement, but the surface will be restored to agriculture use or natural habitat. The construction disturbance area will be 100-feet wide. Boring will be used for construction of the pipeline across the Delta-Mendota Canal, the California Aqueduct, and Interstate Highway 580. The maximum estimated impacts include the temporary loss of approximately 28.5-acres of nonnative annual grassland, 7.7-acres of agricultural land.

**Wildlife Habitat.** Construction of the natural gas pipeline will temporarily displace the wildlife that live there, including species such as the California ground squirrel, cottontail rabbit, black-tailed jackrabbit, gopher snake, western fence lizard, and American crow. None of these species is uncommon and the affect of removing this grassland habitat is not considered significant.

The habitats within the eastern portion of the proposed natural gas pipeline corridor potentially provide foraging habitat for burrowing owls, San Joaquin kit fox, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, and California horned lizard, and this area may also provide upland habitat for the California tiger salamander. Construction of the natural gas pipeline will cause a temporary loss of foraging habitat for these species; however, there is adequate nonnative annual grassland and agricultural habitat available locally.

The lack of a survey along the western portion of the proposed natural gas pipeline corridor prevents an analysis of whether or not there is suitable habitat or presence of special-status species within this area. Patterson Run Creek is a concern and needs to be surveyed to determine habitat suitability for the special-status species of concern within the project area.

### **Transmission Line**

**Vegetation.** The proposed transmission line from the site switchyard to the PG&E Tesla Substation is approximately 0.8 mile long. It crosses nonnative annual grassland and wetland habitats. There will be a total temporary disturbance area of approximately 40,000-square feet (0.9-acres) of nonnative annual grassland habitat. The permanent disturbance area for the transmission line will be approximately 0.1-acre (100-square feet per structure; see Table 3.7-3) of nonnative annual grassland. Construction activities will not be conducted within the wetland habitat; therefore, there will not be disturbance to the wetland habitat.

**Wildlife Habitat.** Construction of the transmission line will temporarily displace common wildlife species such as the California ground squirrel, cottontail rabbit, gopher snake, western fence lizard, and American crow. The affect of temporarily impacting and permanently removing habitat is not considered significant for these species.

The nonnative annual grassland habitat within the proposed transmission line may provide foraging habitat for a number of special-status wildlife species, including burrowing owls, San Joaquin kit fox, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, and California horned lizard, and this area may also provide upland habitat for the California tiger salamander. Construction of the transmission line will cause a temporary loss of habitat for these species with a minimal amount of permanent habitat loss; however, there is suitable nonnative annual grassland habitat available locally. Additionally, the new transmission line may provide perching sites for foraging raptors.

### **Ravenswood Transmission Line**

**Vegetation.** The Ravenswood transmission line runs from the southwestern side of the Tesla Substation expansion to the northwest to connect with an existing transmission line. It is approximately 1,800-feet long and crosses nonnative annual grassland and wetland habitats. There will be a total temporary disturbance averaging about 1.6 acres of nonnative annual grassland habitat. The permanent disturbance area for the Ravenswood transmission line will be approximately 0.1 acres. Construction activities will not be conducted within the wetland habitat; therefore, there will not be any disturbance to the wetland habitat.

Construction of the Ravenswood transmission line will temporarily displace wildlife species such as the California ground squirrel, cottontail rabbit, gopher snake, western fence lizard, and American crow. The affect of temporarily impacting and permanently removing habitat is not considered significant for these species.

The nonnative annual grassland habitat within the proposed transmission line may provide foraging habitat for a number of special-status wildlife species, including burrowing owls, San Joaquin kit fox, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, and California horned lizard, and this area may also provide upland habitat for the California tiger salamander. Construction of the transmission line will cause a temporary loss of habitat for these species with a minimal

amount of permanent habitat loss; however, there is suitable nonnative annual grassland habitat available locally. Additionally, the new transmission line may provide perching sites for foraging raptors.

### **Water Supply Pipeline and Water Supply Pump Station**

**Vegetation.** A portion of the proposed water supply pipeline and pump station may affect nonnative annual grassland habitat. The proposed pipeline is approximately 1.7-miles long and runs adjacent to Midway Road. The easement for the proposed pipeline will be 25-feet wide and within the Midway Road right-of-way. The construction disturbance area will be 50-feet wide. There will be no temporary or permanent access road for the water supply pipeline. All surfaces will be restored to their original condition, and there will be no permanent disturbance area. The temporary disturbance to nonnative annual grassland habitats may encompass approximately 6.3-acres.

Construction of the water supply pump station may cause a permanent disturbance of approximately 0.5-acre of nonnative annual grassland. There may also be an access road 200-feet long and 26-feet wide (20-foot pavement with 3-foot shoulder on either side). Temporary disturbance area for the access road would be 100-feet wide.

**Wildlife Habitat.** Construction of the water supply pipeline will temporarily displace common wildlife species such as the California ground squirrel, cottontail rabbit, gopher snake, western fence lizard, and American crow. The affect of temporarily impacting and permanently removing habitat is not considered significant for these species.

The nonnative annual grassland habitat within the area of the water supply pipeline provides nesting and foraging habitat for burrowing owls; therefore, there will be a direct impact on this species. The water supply pipeline, pumping station, and access road may also provide foraging habitat for a number of special-status species, including the San Joaquin kit fox, ferruginous hawk, Swainson's hawk, mountain plover, white-tailed kite, California horned lark, San Joaquin whipsnake, and California horned lizard, and this area may also provide upland habitat for the California tiger salamander. The project will cause a loss of foraging habitat for these species; however, there is adequate nonnative annual grassland habitat available locally.

#### **5.3.5.2 Direct Impacts to Special-Status Species**

Construction of the TPP could result in the temporary and permanent loss of habitat important to special-status wildlife species in the project area. The only special-status species known to occur in the project area that may be impacted by the project is the burrowing owl. However, the area is considered occupied habitat for the San Joaquin kit fox (Larsen, 2001), and upland habitat for the California tiger salamander (Gann, 2001a). A summary of potential project temporary and permanent impacts to habitats for these species is provided in Table 5.3-7.

**Table 5.3-7. Impacts to Special-Status Species**

<b>Project Component</b>	<b>Special-Status Species Affected</b>	<b>Permanent Habitat Loss (acres)</b>	<b>Temporary Habitat Loss (acres)</b>
Project Site and Adjacent Construction Laydown Area	Burrowing owl	25.0	40
	San Joaquin kit fox	25.0	40
Natural Gas Pipeline	San Joaquin kit fox	0	28.5
	Burrowing owl	0	28.5
Ravenswood Transmission Line	Burrowing owl	0.1	0.4
	San Joaquin kit fox	0.1	0.4
Transmission Line	San Joaquin kit fox	0.1	0.9
	Burrowing owl	0.1	0.9
Water Supply Pipeline and Water Supply Pump Station	Burrowing owl	0.5	6.3
	San Joaquin kit fox	0.5	0.0

### **Project Site and Adjacent Construction Laydown Area**

Burrowing owls are known to occupy the project site. Eight active burrows have been identified on the site with at least one mating pair of owls. However, at any given time up to six owls were spotted flying around the site. Construction of the TPP will directly impact the burrowing owls on the site. Burrowing owl burrows and small mammal burrows, which may be used by burrowing owls and California tiger salamanders, are prevalent within the entire site location; however, the majority of the active owl burrows were located in the southwest corner of the property. Proposed mitigation measures (Section 5.3.3) include preconstruction surveys, construction timing restrictions, relocation, and habitat conservation prior to any construction activities.

Construction of the TPP will also result in the permanent loss of approximately 25-acres of San Joaquin kit fox habitat and potential California tiger salamander upland habitat.

### **Natural Gas Pipeline**

There have been no special-status species identified within the eastern portion of the construction corridor for the natural gas pipeline. Construction of the natural gas pipeline will result in the temporary loss of San Joaquin kit fox habitat and potential upland habitat for the California tiger salamander.

### **Transmission Line**

There have been no special-status species identified within the construction corridor of the transmission line. However, there are numerous small mammal burrows within the corridor, which may be used by burrowing owls and California tiger salamanders.

**Ravenswood Transmission Line**

There have been no positive identifications of special-status species within the construction corridor of the Ravenswood transmission line. However, there has been the identification of a potential San Joaquin kit fox burrow within the southernmost portion of the transmission line corridor. There are numerous small mammal burrows within the corridor, which may be used by burrowing owls and California tiger salamanders.

**Water Supply Pipeline and Water Supply Pump Station**

The construction of the water supply pipeline will be adjacent to Midway Road. There is one identified occupied burrowing owl burrow with a mating pair of owls on the east side of the road. There are no other special-status species identified within the construction corridor for the water supply pipeline. There are numerous small mammal burrows within the construction corridor, which may be used by burrowing owls and California tiger salamanders.

There are no special-status species known to occupy the site of the water supply pump station.

**5.3.5.3 Impacts from Project Operation****Direct Impacts**

Operation of the project would cause an increase in noise that may cause disturbance of wildlife using nearby areas. Project operations would increase localized traffic, which could result in additional incidental road kills. Additional transmission lines would increase collision and electrocution hazard for raptors. However, since the wildlife in the area is already exposed to similar impacts, impacts from the TPP are expected to be insignificant.

**Indirect Impacts**

Project emissions could impact nearby vegetation. Section 5.2.4.6 presents an evaluation of the potential impacts of project emissions on vegetation. The evaluation discusses oxides of nitrogen and sulfur compounds. Dust and emission pollution is regulated in Alameda and San Joaquin counties and will not exceed levels considered harmful to wildlife and plants during the construction and operation of the project. Emission impacts on vegetation from the proposed project are expected to be below levels of significance.

The project includes an 22-cell mechanical draft cooling tower located near the center of the power plant site. Cooling tower drift could cause deposition of salts that may impact nearby vegetation. Water for the cooling towers will be supplied from the California Aqueduct, a component of the Central Valley Project. An analysis of this water is presented in Table 3.4-11. Based on the water balance provided in Table 3.4-10, the concentration of dissolved materials in the cooling tower drift is expected to be approximately 20 times higher than in the water supplied by the California Aqueduct. The following dissolved solids would be present in the drift, listed in order of decreasing concentration: sodium, sulfate, chloride, silica, bicarbonate, calcium, potassium, borate, magnesium, boron, and iron. Other dissolved solids would be present in the circulating water, but are projected to be in concentrations of one part per million or less. The annual cooling tower drift deposition modeled using the

ISCST3 model projected a maximum of  $0.525 \text{ g/m}^2/\text{year}$  at a location that is approximately 200 meters northeast of the cooling tower and would diminish rapidly with increasing distance.

Literature was reviewed to ascertain whether circulating water components might cause adverse effects to vegetation when applied as drift. Pahwa and Shipley (1979) exposed vegetation (corn, tobacco, and soybeans) to varying salt deposition rates to simulate drift from cooling towers that use saltwater (20-25 parts per thousand) circulation. These agricultural varieties of plants were selected for large leaf area, rapid growth, and high yield, and they are considered to be more sensitive than most non-cultivated natural vegetation to cooling tower drift. Salt stress symptoms on the most sensitive crop plant (soybeans) were barely perceptible at a deposition rate of  $2.98 \text{ g/m}^2/\text{year}$  (Pawha and Shipley 1979). Using an assumption that 100 percent of the airborne particulates from TPP cooling tower emissions are salts in the cooling tower drift, the calculated deposition rate of  $0.525 \text{ g/m}^2/\text{year}$  is well below the deposition rate that was shown to cause barely perceptible vegetation stress from salt mist. As a result, the deposition of salts to vegetation found in the vicinity of the power plant is not expected to cause detectable reduction in growth or significant visible damage.

#### **5.3.6 Mitigation Measures**

This section provides a description of the mitigation measures for the following resources:

- Vegetation and Special-Status Plant Species
- Wetlands
- Wildlife and Special-Status Animal Species

Biological impacts have been minimized to the extent practical by siting facilities away from sensitive habitats. The power plant site will be located on existing ranch land. The proposed natural gas pipeline will avoid impacting wetlands along Patterson Run Creek and the area between the Delta-Mendota and the California Aqueduct by using directional drilling construction techniques. The water supply pipeline is located adjacent to Midway Road, which eliminates the needs for access roads and limits impacts to sensitive species and their habitats.

In addition to the mitigation measures incorporated into the project design, the Applicant proposes the following mitigation measures to ensure the potential impacts to biological resources remain insignificant.

#### **Designated Biologist**

The Applicant will designate a biologist to manage all biological resource conditions of certification.

**Employee Environmental Awareness Program**

The Applicant will develop and institute an Employee Environmental Awareness Program to inform construction and operations workers about biological resources associated with the project.

**Burrowing Owl Mitigation**

The Applicant will follow the Burrowing Owl Mitigation Guidelines formulated by the Burrowing Owl Consortium (1993), which includes the following:

- Preconstruction surveys will be conducted within 30 days prior to initial ground-disturbing activities.
- No construction is allowed in known occupied burrowing owl habitat during the breeding season (February 1 to August 31).
- If construction is unavoidable during the breeding season, or resident owls are present, owls must be moved away from the disturbance area using passive relocation methods prior to the breeding season. This means that the owls will be encouraged to relocate to alternate natural or artificial burrows that are beyond 50-meters from the impact zone and that are contiguous to a minimum of 6.5-acres of foraging habitat for each pair of relocated owls. Owls will be excluded from burrows in the immediate impact zone and within a 50-meter buffer zone by installing one-way doors in burrow entrances. Doors will be left in place for a minimum of 48-hours to insure that owls have left the burrow before excavation. The project area will be monitored for one-week after the relocation of owls to confirm owl use of alternative burrows before excavating burrows in the immediate impact zone. Relocation will occur in the non-breeding season, and owls will be given at least one week to move and acclimate to new burrows.
- Replacement of habitat will occur at a 1:1 ratio based on the project footprint, as per CDFG (Gann, 2001b).

**San Joaquin Kit Fox Mitigation**

The Applicant will develop and implement a San Joaquin kit fox mitigation and monitoring program that will include the following:

- Pre-construction survey of occupied and natal dens of the project area.
- On-site biological monitor during all construction activities.
- Replacement of disturbed habitat at a ratio required by the USFWS through the purchase of San Joaquin kit fox habitat from an USFWS-approved mitigation bank.

**California Tiger Salamander**

The Applicant will develop and implement a California tiger salamander mitigation and monitoring program that will include the following:

- Consultation with USFWS and CDFG to determine the necessary pre-construction surveys in the project area.
- On-site biological monitor during all construction activities.

**5.3.7 Significant Unavoidable Adverse Impacts**

The total permanent loss of habitat from the TPP includes that from the construction of the power plant, the power plant site access road, the water supply pump station, and the transmission line structures. The estimated loss of habitat totals approximately 26-acres. Loss of this habitat cannot be avoided; however, the project includes mitigation measures designed to ensure the impact of the loss of habitat remains insignificant.

**5.3.8 Cumulative and Growth-Inducing Impacts**

The cumulative impacts discussion for the TPP is based on the CEQA (PRC §21083) and the CEQA Guidelines [California Code of Regulations (CCR) §15130] which requires that the discussion of cumulative impacts be “guided by the standards of practicality and reasonableness” [PRC §21083(b)]; and that “the discussion include a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts” [CCR §15130(b)(1)(A)]. The CEQA Guidelines require that cumulative impacts be discussed when they are significant, and that the discussion of cumulative impacts reflects the severity of the impacts and their likelihood of occurrence. However, the Guidelines state that the cumulative impacts discussion need not be provided in as great of detail as is provided for the proposed project. Therefore, the purposes of this section are:

- Identify past, present, and reasonably foreseeable actions in the project area that could affect the same biological resource(s) as the TPP,
- Determine if the impacts of the TPP and other actions would overlap in time or geographic extent,
- Determine if the impacts of the proposed project would interact with, or intensify, the impacts of other actions,
- Identify any potentially significant cumulative impacts, and
- Discuss the possible growth-inducing impacts.

**5.3.8.1 Projects within the TPP Area**

The TPP includes a power generating plant and ancillary facilities (i.e., natural gas pipeline, water supply pipeline and pump station, and transmission line). For this discussion of cumulative impacts, the general geographic area considered is an approximate 15-mile radius around the power plant.



Projects identified for consideration in this discussion of cumulative impacts include the following: 1) projects where an application has been submitted to local jurisdictions for required approvals and permits, 2) projects that have been previously approved and may be implemented in the near future, and/or 3) projects that have been completed within the last 3 years. Projects considered include power projects, housing developments, and business and industrial complexes. Projects known to the Applicant within approximately 15 miles of TPP are listed in Table 5.3-8.

#### **5.3.8.2 Cumulative Impacts to Biological Resources within the TPP Region**

Of the 22 projects identified in Table 5.3-8, nine are within established urban areas and are unlikely to impact biological resources. All of the remaining projects were identified by county agencies as requiring discretionary permits and thus subject to CEQA review, including an assessment of impacts to biological resources and development of mitigation plans to reduce or eliminate potential impacts. Special-status species with potential to be affected by the TPP and other projects in the region include the San Joaquin kit fox, burrowing owl, and California tiger salamander. The TPP would not result in significant cumulative effects on special status plants, natural plant communities, wetlands, or wildlife. Though the project would result in a permanent loss of approximately 26 acres of upland habitats, this loss would be mitigated by replacement or enhancement of equal or larger quantity of similar habitat in the general project area. As a result, the project is not expected to result in any significant cumulative impacts to biological resources.

#### **5.3.8.3 Growth-Inducing Impacts of the TPP**

A project may be considered growth-inducing under the following three circumstances:

1. The project is located in an isolated area and brings sufficient urban infrastructure that can result in development pressure being placed on the intervening and surrounding land. This type of induced growth leads to conversion of adjacent acreage to higher intensity uses.
2. A large project, relative to the surrounding community or area, affects the surrounding community by facilitating and indirectly promoting further community growth. In this case the additional growth is not necessarily adjacent to the site or of the same land use type as the project itself, but the growth cycle induced can alter the community's size and character significantly.
3. A new type of development is allowed in an area, which establishes a precedent for additional development of a similar character (AQMD, 2001).

**Table 5.3-8. Projects Known by the Applicant within Approximately 15 Miles of TPP**

<b>Project</b>	<b>Approximate Distance from TPP</b>	<b>Project Features</b>	<b>Approximate Completion Date</b>	<b>Within Established Urban Areas (Y/N)</b>
<b>Power-Related Projects</b>				
Altamont Pass Wind Resource Area	2 miles	Repowering	Ongoing	N
East Altamont Energy Center	5 miles	Power Plant	June 2004	N
Tesla Substation Expansion	0.5 mile	Expansion	Ongoing	N
<b>Industrial Projects</b>				
Northeast Industrial	8.7 miles	Industrial Complex	August 2001	Y
Tracy Logistics Center	3 miles	Warehouse Facility	2001	N
National Drive Business Center	7.5 miles	Industrial Complex	2001	N
Airport Business Center	8.5 miles	Industrial Complex	2001	N
National Corporate Center	7.2 miles	Industrial Complex	2001	N
Hawthorn Technology Park	7.2 miles	Industrial Complex	Planned	N
Opus/Marathon Business Center	7.7 miles	Industrial Complex	2001	N
<b>Retail/Office Space Projects</b>				
Copper Hill Business Park	7.2 miles	Retail Complex	2001	N
Pacific Corporate Center	7.5 miles	Retail Complex	2001	N
Holiday Inn Express	9 miles	Hotel	Summer 1999	Y
Tracy Autoplaza	8.5 miles	Car dealership	1999 - 2000	Y
Fairfield Inn	6.5 miles	Hotel	Summer 1999	Y
Hampton Inn	6.5 miles	Hotel	Summer 1999	Y
Patterson Pass	2 miles	Business complex	Planned	N
West Valley Mall Expansion	6.5 miles	Retail complex	Ongoing	Y
The Plaza on Tracy Boulevard	7 miles	Office Complex	2001	Y
<b>Residential Development Projects</b>				
Stone Pine Meadows	7.5 miles	Affordable Housing	2000	Y
The Bluffs Project	9.3 miles	Single-Family Housing	1999	Y
Mansionettes	6.2 miles	Housing	2000	N

Source: California Energy Commission, Tracy Chamber of Commerce, City of Livermore

None of the above scenarios characterize the TPP. The TPP will not promote additional growth; it will support existing demand and growth that is already expected. PG&E states that demand for electrical energy in the tri-valley region of California, which includes eastern Alameda County, has increased rapidly over the past five years. Based on historical data, the area's projected economic outlook, and known customer development plans, PG&E predicts that the electrical demand of the tri-valley region will increase by approximately 7.2% annually over the next five years. The approval of "Measure D" in November 2000, which acts to limit the amount of growth in eastern Alameda County may reduce this estimate, but PG&E still projects that the electrical demand in the area in the next five years will not be met by the current infrastructure (CPUC, 2000).

### **5.3.9 Applicable Laws, Ordinances, Regulations, and Standards (LORS)**

Design, construction, and operation of the project, including transmission lines, pipelines, and ancillary facilities will be conducted in accordance with all LORS pertinent to biological resources. The project will comply with all LORS relevant biological resources as noted in Table 6.1-1.

The following LORS are applicable or potentially applicable to the proposed TPP in the context of biological resources.

#### **5.3.9.1 Federal Authorities and Administering Agencies**

**Endangered Species Act of 1973; 16 USC § 1531 et seq.; 50 CFR Parts 17.1 et seq.** The ESA includes provisions for the protection and management of Federally-listed threatened or endangered plants and animals and their designated critical habitats. Section 10(1)(A) of the ESA requires a permit to "take" threatened or endangered species during lawful project activities. If there is not a federal nexus for the project, a Habitat Conservation Plan (HCP) may be necessary.

The administering agency for the above authority for terrestrial and avian species is the USFWS and the National Marine Fisheries Service (NMFS).

**Fish and Wildlife Coordination Act (Section 7); 16 USC 742 et seq., 16 USC 1531 et seq., 50 CFR 17.** This authority requires consultation if any project facilities could jeopardize the continued existence of an endangered species. Applicability depends on federal jurisdiction over some aspect of the project.

The administering agency here for the above authority is the USFWS.

**National Environmental Policy Act; 42 USC § 4321 et seq.** NEPA requires analysis of the environmental effects of federal actions, including any effects to biological resources.

The administering agency for the above authority is the USFWS.

**Section 404 of Clean Water Act of 1977; 33 USC § 1251 et seq; 33 CFR, Parts 320 and 323.** Section 404 of the Clean Water Act gives the U.S. Army Corps of Engineers authority to

regulate discharges of dredged or fill material into the waters of the United States, including wetlands.

The administering agency for the above authority is the U.S. Army Corps of Engineers.

**Migratory Bird Treaty Act; 16 USC §§ 703 - 711; 50 CFR Subchapter B.** The Act includes provisions for protection of migratory birds, including basic prohibitions against any taking not authorized by federal regulation.

The administering agency for the above authority is the USFWS.

#### **5.3.9.2 State Authorities and Administering Agencies**

**California Endangered Species Act of 1984; California Fish & Game Code §§ 2050 – 2098; Title 14 CCR § 15000 *et seq.*** The Act includes provisions for the protection and management of plant and animal species listed as endangered or threatened, or designated as candidates for such listing. The Act includes a consultation requirement "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existence of any endangered or threatened species ... or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§ 2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR § 670.2. Animals of California declared to be endangered or threatened are listed at 14 CCR § 670.5. 14 CCR § 15000 *et seq.* describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site.

The administering agency for the above authority is the CDFG.

**Title 14, CCR, Section 670.5.** Lists animals of California declared to be threatened or endangered.

**Native Plant Protection Act of 1977; California Fish and Game Code § 1900 *et seq.*** The code lists state-designated rare and endangered plants and provides specific protection measures for identified populations.

The administering agency for the above authority is the CDFG.

**California Fish & Game Code § 3511, 4700, 5050, and 5515.** The code prohibits the taking and possessing of birds, mammals, reptiles and amphibians, and fishes listed as "fully protected".

The administering agency for the above authority is the CDFG.

**California Fish & Game Code § 1603.** The code specifies CDFG review procedures for any proposal to "substantially change the bed, channel, or bank of any river, stream, or bed designated by the CDFG."

The administering agency for the above authority is the CDFG.

**California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 2309, and Chapter 2. Subchapter 5. Article 1. Appendix B. Part (i).** These code and regulation sections require the CEC to include in its decision provisions that will assure protection of environmental quality. In the context of biological resources, a proposed project is generally considered to have a significant effect on the environment if it will substantially affect a rare or endangered species (20 CCR § 15380).

The administering agency for the above authority is the CEC (with comment by the CDFG).

### 5.3.9.3 Local Authorities and Administering Agencies

#### **Land Use, Open Space, and Conservation Element of Alameda County General Plan.**

This plan requires that the project be compatible with any threatened or endangered species habitat. Mitigation measures have been proposed by the applicant and will be refined through consultation with state and federal agencies.

The administering agency for the above authority is the Alameda County Community Development Agency.

### 5.3.9.4 TPP Compliance with Biological LORS

The TPP includes mitigation for loss of habitat and any impacts to listed species. In addition, the TPP will consult with federal and state agencies and obtain all necessary permits and approvals. Therefore, the TPP will comply with all LORS regarding biological impacts.

### 5.3.10 Involved Agencies and Agency Contacts

Agencies and agency contacts relative to biological resources for the project are provided in Table 5.3-9.

**Table 5.3-9. Involved Agencies and Agency Contacts**

Agency	Contact/Telephone	Permits/Reason for Involvement
U.S. Fish and Wildlife Service 2800 Cottage Way, W2605 Sacramento, CA 95825	Sheila Larson (916) 414-6600	Biological Opinion regarding threatened or endangered species
California Department of Fish & Game Yountville Field Office P.O. Box 47 Yountville, CA 94599	Janice Gann (209) 835-6910	Biological Opinion regarding threatened or endangered species
US Army Corps of Engineers 1325 J. Street Sacramento, CA 95814-2922	Staff (916) 557-5100	Clean Water Act Section 404, Nationwide 12 permit, Utility Line Discharge
California Department of Fish & Game 7329 Silverado Trail Napa, CA 94558	Staff (707) 944-5500	Section 1603 Streambed Alteration Agreement

### 5.3.11 Permits Required and Permit Schedule

State and federal permits required for anticipated biological resource impacts are summarized in Table 5.3-10. The listed agencies will be contacted to obtain the necessary permits at the appropriate time.

**Table 5.3-10. Key Permits and Licenses Required for the Tesla Power Project**

Authority	Permit	Purpose
Corps of Engineers	Clean Water Act Section 404, Nationwide 12 permit, Utility Line Discharge	Construct near waters of the United States and adjacent wetlands (for utility lines only)
Regional Water Quality Control Board	Clean Water Act, Section 401, Water Quality Certification	Construct near waters of the United States
US Fish and Wildlife Service	Biological Opinion/ Incidental Take Permit	Mitigate potential loss of endangered species habitat
California Department of Fish and Game	Section 1603 Streambed Alteration Agreement	Permit construction in or near streambed or riparian zone

### 5.3.12 References

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